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**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

ORACLE AMERICA, INC.

Plaintiff,

v.

GOOGLE, INC.

Defendant.

Case No. CV 10-03561 WHA

**DECLARATION OF IAIN M. COCKBURN  
IN SUPPORT OF ORACLE AMERICA,  
INC.'S MOTION TO STRIKE PORTIONS  
OF GREGORY LEONARD'S  
SUPPLEMENTAL REPORT**

Dept.: Courtroom 8, 19th Floor  
Judge: Honorable William H. Alsup

1 I, IAIN M. COCKBURN, declare as follows:

2 1. I have been retained by Oracle America, Inc. ("Oracle") as an expert in this matter. My  
3 background and qualifications, the terms of my retention, and the documents I have reviewed are set  
4 forth in the report I submitted in this matter on February 3, 2012, as revised February 9, 2012, and I  
5 incorporate them herein by reference.

6 2. I have reviewed the supplemental expert report of Dr. Gregory Leonard dated February 17,  
7 2012, and counsel for Oracle asked me to consider in particular the forward citations analysis  
8 included on page 7 of Dr. Leonard's supplemental report and supported by the backup materials that  
9 were subsequently produced by Google.

10 3. As I described at my deposition, I am very familiar with patent citations analysis.<sup>1</sup> A  
11 citations analysis involves, in its simplest form, counting citations to any given patent that appear in  
12 later-issued patents. I have worked extensively with this aspect of patent data since I wrote my Ph.D.  
13 thesis, and I have since conducted substantial research on citations analysis. I have also served as  
14 principal investigator and project leader of a major National Science Foundation funded project to  
15 develop and extend the National Bureau of Economic Research's pioneering work in this field. I am  
16 very familiar with methodological issues in the use of patent citations from my academic work. As I  
17 explained in my deposition, in my opinion, patent citation analysis is not a reliable basis for  
18 comparing and ranking patents in the context of this case. In addition, Dr. Leonard's analysis of  
19 citations is methodologically flawed.

20  
21  
22 <sup>1</sup> I also note that I have published numerous peer-reviewed articles concerning patent citation  
23 analysis. See Cockburn, I., MacGarvie, M. "Patents, Thickets and the Financing of Early-Stage  
24 Firms: Evidence from the Software Industry." Journal of Economics and Management Strategy,  
25 2009, 18(3):729-773; Cockburn, I., and MacGarvie, M. "Entry and Patenting in the Software  
26 Industry." Management Science, 57(5):915-933; Kleis, L., P. Chwelos, R. Ramirez and I. Cockburn  
27 "Information Technology and Intangible Output: The Impact of IT Investment on Innovation  
28 Productivity." Information Systems Research, forthcoming; Agrawal, A., I. Cockburn, and J.  
McHale "Gone But Not Forgotten: Labor Flows, Knowledge Spillovers, and Enduring Social  
Capital." Journal of Economic Geography, 2006, 6(5), pp. 571-591; Agrawal, A., Cockburn, I. and C.  
Rosell "Not Invented Here: Innovation in Company Towns." Journal of Urban Economics, 2009,  
67(1):78-89; Wagner, S. and I. Cockburn, I. "Patents and the Survival of Internet-related IPOs."  
Research Policy, 2010, 39(2):214-228.

4. There are two fundamental problems with Dr. Leonard's citations analysis, each of which render Dr. Leonard's analysis unreliable and result in Dr. Leonard understating the relative significance of the patents-in-suit. First, Dr. Leonard fails to account for the fact that certain patents were re-issued. Second, Dr. Leonard fails to account for the fact that the patents were issued on different dates.

5. Dr. Leonard's first error is particularly relevant in this case given that the '104 patent is a re-issue of two prior patents, and there are a substantial number of citations to the prior patents. The predecessor to the '104 is USRE36204E1 (applied for November 1996 and issued in April 1999), which has 1 citation. The predecessor to USRE36204E1 is US5367685 (applied for December 1992 and issued in November 1994), which has 73 citations.

6. Correcting for this error increases the number of relevant citations for the '104 patent from the three (3) listed in Dr. Leonard's backup materials to 77, and changes the rank of the '104 patent from 11th under Dr. Leonard's analysis to 1st. With this correction, the '104 patent has more than double the number of citations as compared to the next most highly-cited patent evaluated by Dr. Leonard. As demonstrated by this one correction, Dr. Leonard's analysis is not only unreliable but also significantly understates the relative significance of the patents-in-suit.

7. Dr. Leonard's second error is also significant because the 22 patents evaluated by Dr. Leonard were issued over various dates spanning more than ten years. His first ranking does not account for this fact in any way, which is a major problem. It is obvious that the later in time a patent is issued, the fewer citations it will accumulate before the present. This issue has been studied in depth by researchers who work with citation counts and it is unambiguous that in any effort to compare citation counts across patents, one has to carefully control for the time that each patent has had to accumulate citations.<sup>2</sup> Without any control for patent issue date, an analysis of citation counts is meaningless.

<sup>2</sup> See, for example, Bronwyn Hall, Adam Jaffe, and Manuel Trajtenberg "Innovation and Market Value," NBER Working paper 6984, 1999. "The determination of the appropriate benchmark is complicated by several phenomena that are inherent to the patent citations data. First, ...the number of citations received by any given patent is truncated in time because we only know about the citations received so far. More importantly, patents of different ages are subject to differing degrees

[Footnote continued on next page]

8. In his second ranking, Dr. Leonard attempts to evaluate the number of citations that each patent he considers receives relative to its peers. For each of the 22 patents, he “benchmarks” against a set of other patents within the same class-subclass, issued within a six-year window around the issuance date for the patent in question. This method of benchmarking is seriously flawed and fails to address the “citation truncation” issue. The issue dates for the comparison patents considered by Dr. Leonard are spread out across the six year period he constructs, so some patents will enjoy a six-year head start in terms of accumulating citations compared to others within that same comparison group. Many patents in the comparison group will have up to three-year head start on the specific patent that Dr. Leonard is examining. Dr. Leonard makes no attempt to correct for this discrepancy in time periods over which patents accumulate citations within his comparison groups.

9. Due to this setup, all of Dr. Leonard’s comparison groups exhibit a strong negative correlation between the number of citation counts and the issuance date – the later the patent is issued, the fewer citations it will accumulate. This issue is especially pronounced for the most recent patents. The ‘720 patent was granted in September 2008, so Dr. Leonard constructs a comparator group of patents that were issued between September 2005 and September 2011. What this means is that a substantial number of patents in this group had over 6 years to accumulate citations – about twice as much time as the ‘720 patent.

10. I have specifically reviewed the comparison groups Dr. Leonard created for the ‘205 and ‘720 patents. Within these groups, the correlations between the number of citations a patent receives and its issue date are -0.34 (‘205 patent comparators) and -0.47 (‘720 patent comparators). These correlations are negative and clearly distinct from zero, affirming that the later a patent was issued, the fewer citations it has accumulated so far. Another way to look at the problem is comparing the average number of citations received by patents issued prior to the ‘205/‘720 patents within their respective groups and patents issued after those patents. Within the ‘205 comparison group, patents issued before the ‘205 have received on average 13.4 citations, while patents issued

[Footnote continued from previous page]

of truncation. For example, it is not obvious whether a 1990 patent that received 5 citations by 1999 should be thought of as more or less highly cited than a 1985 patent that received 10 citations by 1999.”

1 after the '205 received on average 4.9 citations. The discrepancy is even higher for the '720  
 2 comparison group: 4.5 citations for patents issued before the '720 patent and 0.8 citations for patents  
 3 issued after the '720 patent. Not surprisingly, the '104, '205, and '720 patents do not rank highly in  
 4 terms of citations received relative to the comparison sets constructed by Dr. Leonard.

5 11. Because of this approach, Dr. Leonard's results are unreliable and understate the  
 6 relative significance of the patents-in-suit. Sun's patents in question are relatively recent patents: the  
 7 '720 was granted in September 2008 and the '205 was granted in June 2005. The less time has passed  
 8 since the issue date, the more bias is going to be generated by Dr. Leonard's inclusion of patents filed  
 9 in the prior three years in that comparator group. Not surprisingly, for both of Dr. Leonard's  
 10 analyses, of the nine patents-not-in-suit that Dr. Leonard ranks above the '205, only 2 were issued  
 11 later than the '205. However, of the 10 such patents that Dr. Leonard ranks below the '205, seven  
 12 were issued later than the '205. All three patents that were issued in 2008 or later (besides the '720)  
 13 have *zero* citations and are at the bottom of Dr. Leonard's ranking.

14 12. Dr. Leonard's failure to control for the patent issuance date renders his analysis  
 15 meaningless.

16  
 17 I declare under penalty of perjury that the foregoing is true and correct and that this  
 18 declaration was executed on February 24th, 2012 at Boston, Massachusetts.

19  
 20 DATED: February 24, 2012

/s/Iain M. Cockburn

21 IAIN M. COCKBURN  
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ATTESTATION OF FILER

I, Steven C. Holtzman, have obtained Dr. Iain Cockburn's concurrence to file this document on his behalf.

Dated: February 24, 2012

BOIES, SCHILLER & FLEXNER LLP

By: /s/ Steven C. Holtzman  
Steven C. Holtzman

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ORACLE AMERICA, INC.

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